

WHAT IS CLAIMED IS:

1                   1.       A method of dynamically mapping addresses between a virtual disk  
2 address and one or more physical block addresses for a storage system in response to a write  
3 operation requested by a host system, the method comprising:

4                   receiving a write request from a host, said write request including a virtual  
5 memory address and one or more blocks of data;

6                   determining whether memory space in the storage system has been allocated  
7 for the one or more blocks of data based on the virtual memory address;

8                   if it is determined that memory space has been allocated, completing the write  
9 operation to the allocated memory space; and

10                  if it is determined that no memory space has been allocated:

11                   automatically allocating memory space in the storage system for the  
12                   one or more blocks of data; and

13                   completing the write operation to the allocated memory space.

1                   2.       The method of claim 1, wherein determining includes determining  
2 whether a mapping table includes a link between the virtual address and one or more physical  
3 block addresses of the storage system.

1                   3.       The method of claim 1, wherein automatically allocating includes  
2 automatically updating a mapping table to include an entry linking the virtual address and one  
3 or more physical block addresses of the storage system.

1                   4.       The method of claim 1, wherein if it is determined that no memory  
2 space has been allocated, the method further comprises:  
3                   determining the number of blocks of memory space in the storage system to be  
4 allocated.

1                   5.       The method of claim 4, wherein the number of blocks allocated is  
2 greater than the number of data blocks included with the write request.

1                   6.       The method of claim 1, wherein the storage system includes a plurality  
2 of storage devices.

1                   7.     A method of dynamically mapping addresses between a virtual disk  
2 address and one or more physical block addresses for a storage system in response to a  
3 request from a host system to perform an operation on the storage system, the method  
4 comprising:  
5                   receiving a request from a host to perform an operation on one or more blocks  
6 of the storage system, said request including a virtual memory address;  
7                   determining from a mapping table whether memory space in the storage  
8 system has been allocated for the virtual memory address;  
9                   if it is determined that memory space has been allocated, completing the  
10 operation on the allocated memory space; and  
11                   if it is determined that no memory space has been allocated:  
12                   automatically allocating memory space in the storage system for the  
13                   virtual address; and  
14                   completing the operation on the allocated memory space.

1                   8.     The method of claim 7, wherein the operation is a read operation, and  
2 wherein if it is determined that memory space has been allocated, completing the operation  
3 includes retrieving the data from the allocated memory space.

1                   9.     The method of claim 8, wherein the operation is a read operation, and  
2 wherein if it determined that no memory space has been allocated, completing the operation  
3 includes returning a default formatted page without retrieving any data from the storage  
4 system.

1                   10.    The method of claim 7, wherein the operation is a write operation and  
2 wherein the request includes one or more blocks of data to be written to the storage system.

1                   11.    The method of claim 10, wherein if it is determined that no memory  
2 space has been allocated, the method further comprises:  
3                   determining the number of blocks of memory space in the storage system to be  
4 allocated.

1                   12.    The method of claim 11, wherein the number of blocks allocated is  
2 greater than the number of data blocks included with the write request.

1                   13.     The method of claim 7, wherein determining includes determining  
2 whether a mapping table includes a link between the virtual address and one or more physical  
3 block addresses of the storage system.

1                   14.     The method of claim 7, wherein automatically allocating includes  
2 automatically updating a mapping table to include an entry linking the virtual address and one  
3 or more physical block addresses of the storage system.

1                   15.     The method of claim 7, wherein the storage system includes a plurality  
2 of storage devices.

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